CLAIMS:

1. An optical navigation system comprising:

a light source for providing a light beam having a first wavelength incident onto a target surface;

a coherent source for providing a divergent beam having a second wavelength incident onto said target surface;

a first detector for receiving a first reflection of said light beam from said target surface; and

a second detector for receiving a second reflection of said divergent beam from said target surface to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors in response to said first and said second reflections.

2. The system of Claim 1 wherein said second reflection is comprised of a speckle pattern.

3. The system of Claim 1 where said coherent source comprises a VCSEL.

4. The system of Claim 1 further comprising a wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection.

5. The system of Claim 1 further comprising a focusing lens positioned between said coherent source and said target surface.

6. The system of Claim 1 further comprising a collimating lens positioned between said first source and said target surface.

7. The system of Claim 1 further comprising a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection.

8. The system of Claim 1 further comprising a collection lens disposed between said target surface and said detector to increase the collection efficiency of said second reflection.

9. The system of Claim 1 further comprising a third detector to receive said second reflection.

10. The system of Claim 1 wherein said second detector comprises detector strips alternating with non detector strips.

11. An optical navigation system comprising:

a coherent source for providing a first portion of a beam comprising a first wavelength and a second portion of a beam comprising a second wavelength onto a target surface;

a first detector for receiving a first reflection of said first portion of said beam from said target surface; and

a second detector for receiving a second reflection of said second portion of said beam from said target surface to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors in response to said first and said second reflections.

12. The system of Claim 11 wherein said coherent source comprises a first and a second narrowband wavelength filter to produce said first and said second portions of said beam.

13. The system of Claim 11 wherein said coherent source comprises a VCSEL.

14. The system of Claim 11 wherein said second reflection is comprised of a speckle pattern.

15. The system of Claim 11 further comprising a focusing lens operable to focus said second portion of said beam at position between said coherent source and said target surface.

16. The system of Claim 11 further comprising a collimating lens operable to collimate said first portion of said beam.

17. The system of Claim 11 further comprising a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection.

18. The system of Claim 11 further comprising collection lens disposed between said target surface and said detector to increase the collection efficiency of said second reflection.

19. The system of Claim 12 further comprising a third narrowband wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection.

20. The system of Claim 11 further comprising a third detector to receive said second reflection.

21. An optical navigation system comprising:

a coherent source for providing a light beam incident onto a target surface;

a first detector for receiving a first portion of a reflection of said light beam from said target surface; and

a second detector for receiving a second portion of said reflection of said light beam from said target surface to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors in response to said first and said second portions of said reflections.

22. The optical navigation system of Claim 21 wherein said coherent source is positioned at an angle between five and twenty degrees with respect to said target surface.

23. The optical navigation system of Claim 21 further comprising an aperture positioned between said second detector and said target surface to limit the field of view of said second detector.

24. The optical navigation system of Claim 21 wherein said first detector is a correlation detector.